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March 2, 2012

BY HAND DELIVERY AND ECFS

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: *In the Matter of Application of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo, LLC For Consent To Assign Licenses; In the Matter of Application of Cellco Partnership d/b/a Verizon Wireless and Cox TMI Wireless, LLC For Consent To Assign Licenses*, MB Docket No. 12-04
REDACTED – FOR PUBLIC INSPECTION

Dear Ms. Dortch:

In accordance with the Protective Orders in the above-captioned proceeding,[1] Cellco Partnership d/b/a Verizon Wireless, SpectrumCo, LLC, and Cox TMI Wireless, LLC (jointly the "Applicants") hereby submit two copies of their Joint Opposition to Petitions to Deny and Comments ("Joint Opposition") redacted for public inspection. In addition, the Applicants are filing a copy of the redacted Joint Opposition through the Commission's Electronic Comment Filing System.

The Applicants also are submitting under seal (1) one copy of the unredacted version of the Joint Opposition containing Highly Confidential Information and (2) one copy of the partially redacted version of the Joint Opposition containing Confidential Information, pursuant to the Protective Orders.

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[1] *See In the Matter of Application of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo, LLC For Consent To Assign Licenses; In the Matter of Application of Cellco Partnership d/b/a Verizon Wireless and Cox TMI Wireless, LLC For Consent To Assign Licenses*, Protective Order, 2012 FCC LEXIS 184 (WTB Jan. 17, 2012), Second Protective Order, 2012 FCC LEXIS 183 (WTB Jan. 17, 2012) (jointly the "Protective Orders").

Please do not hesitate to contact the undersigned if you have any questions.

Sincerely yours,

/s/ Adam D. Krinsky

Adam D. Krinsky
Counsel to Verizon Wireless

cc: Sandra K. Danner, Broadband Division
Joel Taubenblatt, Spectrum and Competition Policy Division
Jim Bird, Office of General Counsel
Best Copy and Printing, Inc.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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	)	
Application of Cellco Partnership d/b/a	)	WT Docket No. 12-4
Verizon Wireless and SpectrumCo, LLC	)	
For Consent To Assign Licenses	)	
	)	
Application of Cellco Partnership d/b/a	)	
Verizon Wireless and Cox TMI Wireless, LLC	)	
For Consent To Assign Licenses	)	

JOINT OPPOSITION TO PETITIONS TO DENY AND COMMENTS

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March 2, 2012

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JOINT OPPOSITION TO PETITIONS TO DENY AND COMMENTS

INTRODUCTION AND SUMMARY

The proposed assignments of Advanced Wireless Services ("AWS") licenses from SpectrumCo, LLC ("SpectrumCo") and Cox TMI Wireless, LLC ("Cox Wireless") to Cellco Partnership d/b/a Verizon Wireless ("Verizon Wireless") are squarely in line with Administration and Commission policy: to ensure that spectrum is put to use to satisfy the American public's rapidly growing demand for broadband services.[1] The license assignments present compelling public-interest benefits and no countervailing harms.

[1] *See* Application of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo LLC for Consent to Assign Licenses, WT Docket No. 12-4, File No. 0004993617 (filed Dec. 16, 2011) (seeking consent to assign 122 Advanced Wireless Services licenses to Verizon Wireless from SpectrumCo) ("Verizon Wireless-SpectrumCo Application"); Application of Cellco Partnership d/b/a Verizon Wireless and Cox TMI Wireless, LLC for Consent to Assign Licenses, WT Docket No. 12-4, File No. 0004996680 (filed Dec. 21, 2011) (seeking consent to assign 30 Advanced Wireless Services licenses to Verizon Wireless from Cox Wireless) ("Verizon Wireless-Cox Wireless Application").

The license assignments are good for consumers.

- The license assignments will put currently unused spectrum to productive use for the benefit of consumers as part of the first nationwide 4G LTE network.
- By supplying additional spectrum capacity, the license assignments will accommodate customers' rapidly growing data demands for broadband devices like smartphones and tablets and bandwidth-intensive applications such as video streaming and cloud computing. As a result, tens of millions of consumers, businesses, and public safety and other government customers who choose Verizon Wireless to obtain high-speed broadband will continue to receive the quality service they expect.

The license assignments are grounded in sound spectrum policy.

- The license assignments are in line with the Commission's objective of encouraging use of secondary markets to assign spectrum to where it can be put to use to serve customers and benefit the public.
- The license assignments will not reduce competition or consumer choice in any market, because they include only licenses for currently unused spectrum, and there will be no transfer or combination of any other assets, facilities, customers, or operating businesses.
- The spectrum will be put to use in an already competitive marketplace. At a local level, in more than 98 percent of the counties covered by these Applications, the total amount of spectrum Verizon Wireless will hold after the assignments will be at a level that the Commission consistently has determined does not raise competitive concerns, and thus is not subject to further review. In the remaining counties, multiple competitors are operating, and many more hold unused spectrum. No commenter provides any evidence that consumers or competition would be harmed in those few counties (or anywhere else).

At a national level, approximately three quarters of all "in-screen" spectrum is held by other companies, and even more spectrum is both available and already in use. And Congress recently passed legislation authorizing the Commission to make additional spectrum available for commercial use to serve the growing and evolving demand of consumers.

Commenters supply no factual or legal basis for the Commission to block or to impose conditions on the proposed transactions. None offers any legitimate claims that these spectrum license assignments would violate the Communications Act (the "Act") or any Commission rule. Many of the allegations are mere speculation, wholly unsupported by facts or data. As the Commission well knows, growth in demand for mobile broadband service is exceeding all expectations. Carriers facing surging demand are striving to accelerate the addition of network capacity just to keep pace. The evidence provided herein demonstrates that Verizon Wireless will not be able to fully meet consumers' growing demand for mobile broadband with its current spectrum holdings. Despite the company's significant investment in network efficiencies, skyrocketing demand will overtake its 4G LTE capacity absent additional spectrum resources, which it needs to secure now given that it faces spectrum constraints in its network in some areas as early as 2013 and in many more by 2015.

Recognizing that the transaction comports with the Commission's policies governing spectrum transfers, some commenters seek to hijack this proceeding for their own competitive purposes. Their requests for new spectrum limits and other restrictions present radical changes to well-settled spectrum policy and merely reflect their parochial vision for the spectrum marketplace. By asking the Commission to consider alternative uses of the spectrum and hypothetical alternative purchasers, commenters would have the Commission ignore the

statutory directive to address the transactions before it, not conjured ones.[2] They chastise the Commission for not regulating the wireless industry more – criticism that is as meritless as it is irrelevant in a license assignment proceeding. Here, consistent with the Act and its own precedent, the Commission's review should focus solely on these specific license assignments.

Many commenters make claims that are either irrelevant to this spectrum transaction or beyond the scope of this proceeding. They request conditions to address alleged harms that are not related to the transaction or assert that the Commission should act in this proceeding on pending industry-wide policy issues, many of which are already the subject of adopted or proposed generic rules. Their requests are foreclosed by established Commission precedent.

Finally, despite the invitation of some commenters, the Commission should not review separate commercial agreements that do not involve any license transfers.[3] Section 310(d) only permits the Commission to review the spectrum license assignment before it, not other transactions that happen to involve the same parties. The Commission consistently has declined to review business arrangements not implicating its statutory authority, even when (unlike the

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[2] Section 310(d) of the Act prohibits the Commission from considering "whether the public interest, convenience, and necessity might be served by the transfer, assignment, or disposal of the permit or license to a person other than the proposed transferee or assignee." 47 U.S.C. § 310(d).

[3] Comcast Corp. ("Comcast"), Time Warner Cable Inc. ("Time Warner Cable"), Bright House Networks, LLC, and Cox Communications, Inc. ("Cox") (collectively, the "cable companies") have each entered into separate commercial agreements with Verizon Wireless, which are not subject to Commission review, that include agency agreements under which the cable companies and Verizon Wireless will sell each other's services on a market-standard commission basis, with the new subscribers becoming customers of the other service provider (*i.e.*, wireless customers signed up by the cable companies would become customers of Verizon Wireless, and cable customers signed up by Verizon Wireless would become customers of the cable companies). The agreements also provide the cable companies with the future option of transitioning to resale of Verizon Wireless services, offering unique, branded wireless services, and for the establishment of a joint venture to develop innovative ways to integrate wireline and wireless services so that consumers can seamlessly use their services across a variety of devices and screens. These agreements are referred to herein as the "Commercial Agreements."

Commercial Agreements here) the arrangements bore directly on the reviewable transaction. In any case, the Commercial Agreements are already being reviewed by the Department of Justice. The alternative bases for review cited by some commenters lack merit, and there is no legitimate rationale for requiring submission of the agreements in unredacted format.

I. THE LICENSE ASSIGNMENTS WILL SERVE THE PUBLIC INTEREST.

As the Applications demonstrate, these license assignments will yield substantial and verifiable public interest benefits. They align with the objectives of the Administration, the Commission's secondary market policy, and its National Broadband Plan by shifting spectrum that is not currently being used to a provider that will use that spectrum to benefit consumers. Specifically, these transactions will enable Verizon Wireless to address the growing mobile broadband demands of its customers. These demands have continued to increase since the parties announced these transactions in December, and no party has provided data to dispute them or the resulting need to deploy more spectrum.

A. Recent Data on Growing Demand for Mobile Broadband Confirm the Need for the Efficient Assignment of Spectrum to Serve Consumers.

Since these license assignments were announced, Chairman Genachowski has reaffirmed the Commission's cardinal objective of ensuring wireless providers have adequate spectrum to meet consumers' needs. He recently reiterated "[t]he plain fact" that "aggregate consumer demand for spectrum for broadband is increasing at a very rapid pace."[4] He concluded that "[i]f we don't … make much more spectrum available for mobile broadband, we are going to get swamped by an ocean of demand and risk our competitive advantage in the race to lead the

[4] Julius Genachowski, Chairman, Federal Communications Commission, Remarks As Prepared For Delivery, 2012 Consumer Electronics Show at 5 (Jan. 11, 2012) ("Genachowski CES Remarks"), http://www.fcc.gov/document/chairman-genachowski-2012-consumer-electronics-show.

world in mobile innovation."[5] During this same period, the Commission considered and approved a similar spectrum-only transaction, explaining that "the transition of underutilized … spectrum towards mobile broadband use … support[s] our goal of expanding mobile broadband deployment throughout the country."[6]

It is well documented – and unchallenged by commenters – that skyrocketing demand for wireless broadband services requires carriers to accelerate the addition of network capacity to keep pace with consumer demand.[7] Government and industry experts concur that the demand for mobile data by 2015 will be 25 to 50 times greater than it was in 2010,[8] due largely to

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[5] *Id.* at 6. The Chairman has framed this issue in the context of global competitiveness: mobile broadband is "a key pillar of a powerful strategic plan to harness communications technology to drive our economy and enduring job creation." *Id.* at 9. He also focused on the need to ensure a "strategic bandwidth advantage." *Id.* The Chairman concluded that "American consumers will face slower speeds, more dropped connections, and higher prices" if the Commission does not make additional spectrum available. *Id.* at 6.

[6] *AT&T Inc. and Qualcomm Inc.*, Order, FCC 11-188, ¶ 94 (Dec. 22, 2011) ("*AT&T-Qualcomm Order*").

[7] *See, e.g.*, Verizon Wireless-SpectrumCo Application, Exh. 1 ("Verizon Wireless-SpectrumCo Public Interest Statement") at 6-10. In fact, various commenters support Verizon Wireless on this point. *See, e.g.*, Comments of International Brotherhood of Electrical Workers, Local 827 and System Council T-6 ("IBEW") at 3; Comments of Free State Foundation ("Free State Foundation ") at 4; Comments of Latinos in Information Sciences and Technology Association ("LISTA") at 2.

[8] Verizon Wireless-SpectrumCo Public Interest Statement at 7; *see also* FEDERAL COMMUNICATIONS COMMISSION, MOBILE BROADBAND: THE BENEFITS OF ADDITIONAL SPECTRUM 5 (Oct. 2010) ("MOBILE BROADBAND TECHNICAL PAPER") ("mobile data demand is expected to grow between 25 and 50 times current levels within 5 years"), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-302324A1.pdf; CISCO, CISCO VISUAL NETWORKING INDEX: GLOBAL MOBILE DATA TRAFFIC FORECAST UPDATE, 2010-2015 at 2 (Feb. 1, 2011) ("CISCO 2010-2015 FORECAST") (estimating that global mobile traffic will increase 26-fold between 2010 and 2015), http://newsroom.cisco.com/ekits/Cisco_VNI_Global_Mobile_Data_Traffic_Forecast_2010_2015.pdf. Cisco's latest projection for global mobile traffic in 2015 is higher even than last year's projection, up from 76 exabytes to over 82 exabytes annually, and it projects continued substantial growth in 2016 as the global mobile traffic is estimated to increase to 130 exabytes, compared to only 16 exabytes this year. *Compare id.* at 5 *with* CISCO, CISCO VISUAL NETWORKING INDEX: GLOBAL MOBILE DATA TRAFFIC FORECAST UPDATE, 2011-2016 at 5 (Feb. 14, 2012) ("CISCO 2011-2016 FORECAST"),

consumers' adoption of advanced devices that use exponentially more bandwidth than traditional mobile phones.[9] The most recent statistics on increased smartphone usage and adoption further highlight the strain carriers face in assuring robust network capacity. Cisco reported that last year the typical smartphone generated 35 times the traffic of a traditional mobile phone, up from only 24 times in 2010,[10] and 4G connections generate 28 times more traffic than non-4G connections.[11] Smartphone adoption is accelerating rapidly: recent surveys show that among consumers 25 to 34, eight out of ten recent new phone purchases were smartphones.[12]

Further exacerbating the network capacity challenge is the rapid adoption of tablets, which use approximately 120 times the capacity of traditional mobile phones.[13] The first mobile-connected tablet had not even been released when the Commission staff issued the National Broadband Plan in March 2010,[14] identifying the pressing need for additional spectrum, even in a pre-tablet, pre-4G mobile broadband marketplace.[15] According to one recent study,

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http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html.

[9] *See* Julius Genachowski, Chairman, Federal Communications Commission, Remarks As Prepared For Delivery, CTIA Wireless 2011 at 5 (Mar. 22, 2011) ("Genachowski CTIA Remarks"), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-305309A1.pdf.

[10] *Compare* CISCO 2010-2015 FORECAST at 2 *with* CISCO 2011-2016 FORECAST at 2.

[11] CISCO 2011-2016 FORECAST at 2.

[12] *See Survey: New U.S. Smartphone Growth by Age and Income*, NIELSENWIRE, Feb. 20, 2012, http://blog.nielsen.com/nielsenwire/online_mobile/survey-new-u-s-smartphone-growth-by-age-and-income/.

[13] Verizon Wireless-SpectrumCo Public Interest Statement at 9; Genachowski CTIA Remarks at 5; CISCO 2011-2016 FORECAST at 2.

[14] FCC, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN (Mar. 16, 2010) ("National Broadband Plan"), http://www.broadband.gov/plan.

[15] Apple began selling the 3G-capable iPad on April 30, 2010. *See* Press Release, Apple, iPad Wi-Fi + 3G Models Available in US on April 30 (Apr. 20, 2010), http://www.apple.com/pr/library/2010/04/20iPad-Wi-Fi-3G-Models-Available-in-US-on-April-30.html.

tablet network traffic increased more than 200 percent on the day after Christmas 2011.[16] By 2016, it is projected that mobile-connected tablets alone will generate almost as much traffic as the entire global mobile network in 2012.[17] These new capabilities are encouraging ongoing innovation in the communications marketplace, from mobile applications and devices to services that help address societal needs, such as e-learning, m-health monitoring services or downloading and remote analysis of 3D MRI scans, and energy conservation.

B. The License Assignments Are Precisely the Use of the Secondary Market that the Commission Has Said Will Help Meet Mobile Broadband Demand and Achieve the Objectives of the National Broadband Plan.

The Applicants have demonstrated that these assignments further the Commission's goals for the secondary spectrum market – to "permit spectrum to flow more freely among users and uses in response to economic demand"[18] and to facilitate "the availability of unused and underutilized spectrum to those who would use it for providing service."[19] No commenter challenges that goal or explains why the assignments would conflict with existing Commission policy.[20] To the contrary, Applicants and commenters have shown that the transactions would support those goals by moving spectrum not being used to serve consumers to an existing

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[16] Press Release, Jumptap, Holiday Tablet Traffic Jumps 229% (Feb. 2, 2012), http://www.jumptap.com/holiday-tablet-traffic-jumps-229/.

[17] CISCO 2011-2016 FORECAST at 3.

[18] *Fostering Innovation and Investment in the Wireless Communications Market; A National Broadband Plan for Our Future,* Notice of Inquiry, 24 FCC Rcd 11322, 11331 n.27 (2009); *see also Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets,* Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking, 19 FCC Rcd 17503, 17505 ¶ 1 (2004); Verizon Wireless-SpectrumCo Public Interest Statement at 16-19.

[19] *Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets*, Policy Statement, 15 FCC Rcd 24178, 24185-86 ¶ 18 (2000).

[20] Efforts by two commenters to recast and modify the Commission's policy objectives are irrelevant to this license assignment proceeding. *See* Petition to Deny of Public Knowledge *et al.* ("Public Knowledge") at 33-34; Petition to Deny of Free Press ("Free Press") at 34.

provider with demonstrated demand.[21] That change, in turn, will allow Verizon Wireless to better serve all of its customers, including those consumers who rely more heavily on mobile broadband as their primary broadband connection.[22]

The Commission's recent announcements and actions underscore why these transactions fully align with its goals. In January, Chairman Genachowski cited secondary market transactions as one of the key measures necessary "[t]o meet th[e] demand" for more spectrum dedicated to mobile broadband use.[23] And in its December order approving AT&T's acquisition of nationwide spectrum from Qualcomm, the Commission expressed support for the assignment of "underutilized" spectrum, emphasizing that "to compete effectively and innovate, a wireless provider must have access to adequate spectrum."[24]

Spectrum acquisition is not merely the province of the largest carriers. A review of the several hundred assignments and transfers approved from January 2010 through December 2011 reveals that almost eight of every ten secondary market transactions resulted in spectrum being

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[21] Free State Foundation at 8; Comments of the Technology Policy Institute ("Technology Policy Institute") at 3.

[22] *See* AARON SMITH, 35% OF AMERICAN ADULTS OWN A SMARTPHONE, ONE QUARTER OF SMARTPHONE OWNERS USE THEIR PHONE FOR MOST OF THEIR ONLINE BROWSING, PEW RESEARCH CENTER, July 11, 2011, http://pewinternet.org/~/media//Files/Reports/2011/PIP_Smartphones.pdf (finding that 38 percent of minority smartphone owners use their cell phone for most online usage, compared to 25 percent nationally); Don Kellogg, *Among Mobile Phone Users, Hispanics, Asians are Most-Likely Smartphone Owners in the U.S.*, NIELSENWIRE, Feb. 1, 2011, http://blog.nielsen.com/nielsenwire/consumer/among-mobile-phone-users-hispanics-asians-are-most-likely-smartphone-owners-in-the-u-s/ (finding that "smartphone penetration is even higher among mobile users who are part of ethnic and racial minorities in the U.S.").

[23] Genachowski CES Remarks at 5.

[24] *AT&T-Qualcomm Order* at ¶¶ 30, 95.

acquired by carriers other than AT&T, Sprint Nextel, T-Mobile, or Verizon Wireless.[25] Contrary to the claims of some,[26] this underscores that the secondary market provides all carriers with the opportunity to access additional spectrum to meet their customers' demands and their networks' capacity challenges.

Moreover, Verizon Wireless actively participates in the secondary market as a seller as well as a buyer, contrary to unsubstantiated claims that it is warehousing spectrum.[27] In the past five years, Verizon Wireless has transferred nearly 40 licenses to carriers of all sizes as it worked to rationalize its spectrum holdings, and it has numerous additional pending transactions before the Commission.[28] These transfers included licenses for spectrum below 1 GHz, despite the unsubstantiated claims of some commenters that such spectrum is the most valuable for mobile broadband services.[29] Additionally, through its LTE in Rural America Program, Verizon Wireless provides interested rural providers with the opportunity to lease 700 MHz spectrum to build out the network and share LTE services. Thus far, 15 rural carrier partners are leasing spectrum from Verizon Wireless, covering 2.7 million people in rural communities in 11 states,[30] and Verizon Wireless is in active negotiations with several additional carriers to extend the program.

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[25] These figures are based on data from the FCC's Assignments and Transfers data table dated February 26, 2012 that encompassed non-pro forma applications with a consummated status, where the consummation occurred between January 1, 2010 and December 31, 2011.

[26] *See, e.g.*, Petition to Condition or Otherwise Deny of RCA – The Competitive Carriers Association ("RCA") at 24; Petition to Deny of NTCH, Inc. ("NTCH") at 2-3.

[27] *See* Free Press at 33; RCA at 2.

[28] *See* Verizon Wireless Spectrum Assignments to Other Licensees, 2007 – Present, attached as *Exhibit 1* at 1-2.

[29] *See, e.g.*, Free Press at 13-14; Public Knowledge at 47.

[30] *See, e.g.*, Press Release, Verizon Wireless, Pioneer Cellular's 4G LTE Network Testing Signals All Systems Go (Dec. 16, 2011), http://news.verizonwireless.com/news/2011/12/pr2011-12-16.html.

The need for a vibrant secondary market – and transactions like the two at issue here – is underscored by the lack of new spectrum available at auction in the near term.[31] Even with the recent enactment of spectrum legislation, it will likely be years before additional spectrum is allocated, service rules are adopted, clearing processes for incumbents are set, and auctions are held.[32]

In addition, the Applicants have demonstrated that these transactions also further the goals of the Administration[33] and the National Broadband Plan[34] – a showing no commenter can rebut. The critical need for additional spectrum for mobile broadband usage was central to President Obama's Presidential Memorandum on wireless broadband, which extolled the promise of mobile broadband but concluded that "[t]his new era in global technology leadership will only happen if there is adequate spectrum available to support the forthcoming myriad of wireless devices, networks, and applications that can drive the new economy."[35]

The National Broadband Plan also recognized that, in addition to new mobile allocations, optimizing spectrum use through secondary markets and other means will help to meet the "growing demand for wireless broadband services and to ensure that America keeps pace with

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[31] While the SpectrumCo and Cox Wireless AWS licenses will help meet the growth in Verizon Wireless customers' demand for wireless broadband, Verizon Wireless fully expects that it will need additional spectrum in the future. Declaration of William H. Stone, Executive Director of Network Strategy for Verizon ("Supplemental Stone Declaration"), attached as *Exhibit 2* at ¶ 3.

[32] Comments of Information Technology and Innovation Foundation ("ITIF") at 2-3; Petition to Deny of T-Mobile USA, Inc. ("T-Mobile") at 14-15; Comments of Sprint Nextel Corporation ("Sprint Nextel") at 16.

[33] President Barack Obama, *Presidential Memorandum: Unleashing the Wireless Broadband Revolution* (June 28, 2010) ("June 2010 Presidential Memorandum"), http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution.

[34] National Broadband Plan at 76-77; *see also* Comments of Hispanic Technology & Telecommunications Partnership ("HTTP") at 2.

[35] June 2010 Presidential Memorandum.

the global wireless revolution."[36] The National Broadband Plan recommended that the Commission "promote access to unused and underutilized spectrum" and "permit a variety of secondary market transactions."[37] It concluded that failing to address the spectrum crunch "could mean higher prices, poor service quality, an inability for the U.S. to compete internationally, depressed demand, and ultimately a drag on innovation."[38]

The Applications provide the Commission with a clear opportunity to help advance these objectives, as did the recently approved AT&T-Qualcomm transaction. In that transaction, the Commission found that "the promised ability of customers to download data more quickly … appears to sit squarely within the objectives of the National Broadband Plan."[39] The same principles apply here.

C. Verizon Wireless Needs Spectrum to Provide the Necessary Capacity to Continue to Deliver the Service Its Customers Expect.

The Applications provide extensive information and data demonstrating why Verizon Wireless will not be able to fully meet consumers' growing demand for mobile broadband with its current spectrum holdings. No commenter rebuts this showing. In a Supplemental Declaration, attached as *Exhibit 2*, Bill Stone, Verizon's Executive Director of Network Strategy, provides further data illustrating how, despite network efficiencies and further investment, skyrocketing demand will overtake the company's 4G LTE capacity absent additional spectrum resources.[40] These license assignments will allow Verizon Wireless to supplement the spectrum

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[36] National Broadband Plan at 84-85.

[37] *Id.* at 83.

[38] *Id.* at 77.

[39] *AT&T-Qualcomm Order* at ¶ 88.

[40] *See generally* Supplemental Stone Declaration. In *Exhibit 3*, wireless engineering expert Dr. David Borth attests to the soundness of the methodology that serves as the basis for the Stone Supplemental Declaration's conclusions regarding the data demands placed on, and the capacity

currently used to provide 4G LTE service and alleviate spectrum constraints that otherwise will degrade service – in some areas as early as 2013 and in many others by 2015.

Verizon Wireless launched its 4G LTE network in December 2010 on its Upper 700 MHz C Block licenses,[41] and it will soon begin deploying its existing AWS spectrum holdings into the 4G LTE network as well. The LTE network now covers over 200 million people in 195 markets.[42] The company originally planned to extend LTE coverage to its existing nationwide 3G footprint – coverage to 294 million people, or 95 percent of the U.S. population, and over 2,000 rural counties – by year-end 2013,[43] but it recently announced plans to achieve that coverage by mid-year 2013, roughly 15 months from now.[44]

Increasing Demand for Network Capacity. Mr. Stone's Supplemental Declaration applies year-end 2011 statistics to update the trends driving massive and accelerating growth in wireless data demand on Verizon Wireless' network. That increase in network traffic is driven

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constraints of, the Verizon Wireless Network. *See* Declaration of David E. Borth ("Borth Declaration"), attached as *Exhibit 3*.

[41] *See* Press Release, Verizon Wireless, Blazingly Fast: Verizon Wireless Launches The World's Largest 4G LTE Wireless Network On Sunday, Dec. 5 (Dec. 4, 2010), http://news.verizonwireless.com/news/2010/12/pr2010-12-03.html.

[42] Press Release, Verizon Wireless, Verizon Continues To Grow Its 4G LTE Network, Launching Service in Five New Markets And Expanding In Three Others On Jan. 19 (Jan. 18, 2012), http://news.verizonwireless.com/news/2012/01/pr2012-01-17i.html.

[43] Press Release, Verizon Wireless, Verizon Wireless Launches The World's Largest 4G LTE Wireless Network On Dec. 5 (Dec. 1, 2010), http://news.verizonwireless.com/news/2010/12/pr2010-11-30a.html.

[44] Thomson Reuters Streetevents, Edited Transcript, VZ – Q4 2011 Verizon Earnings Conference Call, at 3 (Jan. 24, 2012), http://www22.verizon.com/idc/groups/public/documents/adacct/4q11_vz_transcript.pdf.

by the growing number of connections using Verizon Wireless' network, the shift toward more broadband-capable devices, and the rise of bandwidth-intensive applications and services.[45]

The graph below shows both historical and projected data on Verizon Wireless' network, and illustrates the extraordinary growth in customers' use of data services.[46] Starting from zero in early December 2010, LTE data traffic (the blue curve) sharply increased in just the first year of availability, and growth is projected to **[BEGIN HIGHLY CONFIDENTIAL]**

[45] Beyond the 4G LTE network deployment and service rollout, Verizon Wireless is committed to seeding the 4G LTE ecosystem. The company's LTE Innovation Center in Waltham, Massachusetts and its Application Innovation Center in San Francisco are proving to be enormously productive aids to the development and commercialization of 4G LTE products, services, and applications. Press Release, Verizon Wireless, Verizon Innovation Center Participants Highlight Work Of The LTE Ecosystem On Opening Day (July 12, 2011), http://news.verizonwireless.com/news/2011/07/pr2011-07-11d.html; Press Release, Verizon Wireless, Verizon Opens Application Innovation Center in San Francisco (Aug. 10, 2011), http://news.verizonwireless.com/news/2011/08/pr2011-08-09a.html.

[46] **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

Verizon Wireless has experienced actual data growth rates that exceed the company's projections.[47] For example, actual fourth quarter 2011 data traffic was double Verizon Wireless' 2009 forecast for that quarter. And Verizon Wireless has now revised the fourth quarter 2015 forecast upward by approximately 700 percent. Given this historical pattern, spectrum capacity constraints may occur even sooner than projected here.

Verizon Wireless needs to ensure that it has sufficient spectrum resources to meet the growing needs of nearly 109 million connections. As wireless data usage expands, speed also becomes an increasingly important end-user consideration and a differentiator among wireless competitors, as is reflected in the frequent advertising touting mobile providers' network speeds. Higher speeds are critical for applications that require high responsiveness, like two-way video

[47] *See* Verizon Wireless-SpectrumCo Application, Exh. 3, Declaration of William H. Stone, Executive Director of Network Strategy for Verizon ("Initial Stone Declaration") at ¶¶ 10-11.

communications. Conversely, degraded speeds have a significant negative impact on the user experience and productivity, particularly for bandwidth-intensive applications and services. Verizon Wireless thus engineers its 4G LTE network to provide customers not only with quick and reliable connections, but with access to speeds that users will grow to expect as the norm – for LTE, typical download speeds of 5–12 Mbps and upload speeds of 2–5 Mbps. Speed and spectrum capacity are directly related, however, and high-speed services demand substantial bandwidth.

Determining Where Additional Spectrum is Needed. Because substantial lead time is required to acquire and plan for the use of spectrum,[48] Verizon Wireless, like other carriers, constantly assesses whether it has sufficient spectrum in specific markets to meet the needs of its customers. As the Stone Declarations describe, Verizon Wireless applies a demand forecast model based on traffic data collected on the 4G LTE network.[49] The model is informed by the trends above and factors such as average user throughput, historical device sales data, projections of future device sales, customer data usage, and usage trends for new mobile applications.

Mr. Stone explains how these trends help determine the amount of data traffic that cell site sectors can handle, given current spectrum holdings, while maintaining the 4G LTE network performance that Verizon Wireless requires for its customers. Verizon Wireless' experience with LTE over the past year has demonstrated that a fully loaded LTE cell site sector using the Upper 700 MHz C Block spectrum can support **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] and still maintain the speeds the company seeks to provide and its customers expect.[50]

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[48] *Id.* at ¶¶ 12-13.

[49] *See id.* at ¶¶ 19-22; Supplemental Stone Declaration at ¶¶ 18-20.

[50] Supplemental Stone Declaration at ¶ 21.

The Verizon Wireless LTE network capacity assessment accounts for additional capacity that technology advancements and network enhancements can achieve in the network. Specifically, while the data traffic threshold for spectrum-constrained sectors using the Upper 700 MHz C Block spectrum is **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]**, the company expects the threshold to be higher by year-end 2015 due to its plans to aggressively deploy capacity-enhancing techniques. One promising technique is the use of LTE small cells. Small cells typically have a maximum coverage area of up to several hundred meters and effectively increase the overall capacity of the macrocell coverage area in which they operate. Verizon Wireless will begin implementing LTE small cells **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]. Another potential capacity-enhancing technique is adoption of the LTE Advanced standard that Verizon Wireless will be deploying throughout its network.

However, these network infrastructure investments will not be adequate to keep pace with the projected mobile data demand in years 2013 to 2015 and beyond. Indeed, even in markets where Verizon Wireless holds 20 MHz of AWS spectrum already – spectrum it plans to deploy in the LTE network **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** – it will need more spectrum to meet demand.[51] Given the projected **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** in data traffic year over year, even the most optimistic assumptions involving the deployment of widespread small cells and other techniques would not provide sufficient capacity by the end of that two-year period.

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[51] *Id.* at ¶ 29.

As traffic increases above the capacity threshold per cell sector, some customers will experience decreases in speed and quality depending on the mix of uses occurring at that point. Most affected will be services like video streaming and real-time two-way video conferencing. A customer who is streaming video or downloading a large file, for example, is more likely to notice increased jitter or longer buffering times, while a customer on a static web site may not notice a slower speed. Virtually all customers in sectors where demand significantly exceeds the cell sector threshold will experience noticeable reductions in speed, even customers not using speed-intensive services. As latency or packet congestion continues to build in the network, requests for retransmission of data or reinitiation of data sessions by various applications in the device may take place, further degrading the customer experience.

Examples of Markets Where More Spectrum Is Needed in Near-Term. The Supplemental Stone Declaration applies the spectrum planning methodology to 18 markets of varying size to demonstrate rising spectrum constraints across the Verizon Wireless network.[52] The maps in *Exhibit 2* depict all LTE cell sites operating in these markets as of YE 2011 and, as Mr. Stone concludes, "[i]n each case, our projections show that existing spectrum will not meet demand by the end of 2015 across these markets, and in most markets, by as soon as the end of 2013."[53]

The maps for **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** are reprinted below for illustration. They show actual capacity demand at each cell site at YE 2011, and projected demand at YE 2013 and YE 2015. Most cell sites shown are comprised of three sectors. Each sector is color-coded to show whether capacity is projected to be sufficient for projected data traffic. The color scheme for the maps is as follows.

[52] *Id.* at ¶ 30.

[53] *Id.*

A sector in green means customers are experiencing LTE service as Verizon Wireless intends. A sector that is colored yellow is projected to exceed **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** during busy hours, meaning that some customers served by this sector will experience decreases in speeds, depending on the data services they are accessing. In sectors marked red, many more customers are likely to experience a more widespread and substantial degradation in speed and quality of some of their data services. By the end of 2015, the number of red sectors indicating substantial spectrum constraints increases, sometimes sharply, in each market. If the increase in capacity due to other network infrastructure investments does not occur as anticipated, many more cells could also be spectrum constrained by that time.

As the map for YE11 demand in **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** shows, no sector downloaded more than **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** during the applicable busy hour, indicating customer experience within acceptable ranges.[54]

[54] *Id.* at ¶ 32.

[BEGIN HIGHLY CONFIDENTIAL]

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By the end of 2013, however, many of **[BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]** cell site sectors are projected to become spectrum constrained – even with infrastructure enhancements and technology improvements.[55] The red sectors are of greatest concern because they are substantially above Verizon Wireless' design criteria for 2013. Thus, many customers served by these sectors are likely to experience slower speeds during many hours each day. Further, the map shows that the negative impacts on customers due to the lack of spectrum will typically appear first in high-usage areas like the downtown business core.

[55] *Id.* at ¶ 33.